

Syllabus for FINA 5840

Financial Modeling

Fall 2010
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Homepage: This course uses my personal homepage: www.seasholes.com
Hit the “FINA 584” button on the left-hand side
If you are looking for handouts or files, please check this website

Classroom & Times: Thursdays: Cliftons Limited, 33/F, 9 Queens Road Central, MTR “Central” Exit K
7:00pm - 10:20pm
Saturdays: HKUST, Rm 3211 (near Lift 19)
9:00am - 12:20pm

Please plan to attend your section only. Unfortunately, there is no option to “switch” between sections. If you need to permanently change sections, please see the MSc program office.

Overview: This is a course about financial modeling. It covers a range of topics in the field of financial economics. Each topic was chosen because it lends itself to financial modeling. Class meetings are three hours and twenty minutes long. The first 1.5 hours will be spent presenting models and reviewing the current day’s assignment. The second 1.5 hours will be spent introducing the material needed for the following week’s assignment. We cover six different topics:

1. Loan amortization schedules
2. Mutual fund performance and style analysis
3. Optimal portfolio selection
4. Valuation and private equity
5. Fixed income derivatives
6. Equity derivatives

The final class will consist of an exam that is MANDATORY for all students. This is a “hands-on” course that requires students to analyze data and participate in class discussions. Course work is based on cases studies, academic research, and practitioner research.

OBE: When reading this syllabus, please note that “OBE” refers to outcome based education. By focusing on six topics, this course should give students an in-depth grasp of six (key) areas in finance. All assignments should help student develop critical thinking and creative decision making skills.

Modeling: This course is about financial modeling. The goal is to make financial models that produce useful answers to economic questions. The assignments are designed to be similar to assignments students will encounter in their future jobs. Students may use any software they choose, however only Microsoft Excel is required. All assignments can be completed with Excel. Please see the section labeled “Software” below.

This is not a course in computer programming. The course was redesigned three years ago and we decided to concentrate on understanding underlying economic issues. Business school graduates can hire computer programmers to help optimize or speed-up numerical calculations.

Pre-Reqs: Students must have a basic-to-middle level of competence with Microsoft Excel before starting the course. They should know the difference between absolute and relative references. They should be able to use functions such as NPV, IRR, AVERAGE, STDEV, etc. Finally, students should be able to plot data and run regressions with Excel’s internal functions. For those who feel they do not have sufficient Excel experience, we suggest completing the Excel’s tutorials before the first class meeting.

As this is a rather advanced course, students must take all pre-requisite courses. In terms of subject matter, students should be comfortable with equity and fixed-income derivatives, portfolio math, reading financial statements, free cash flow projections, and cost of capital calculations such as WACC.

Readings: This course uses case studies, journal articles, and handouts. Much of the material is posted on the course website. Some journal articles are a bit advanced and should be read (skimmed) for their main ideas rather than for details. The course reader can be picked up at the first class meeting.

- 2 HBS cases
- 2 Journal articles
- 1 HBR article
- + Handouts and other materials to be posted on class website

Software: The professor and teaching assistant use Microsoft Excel 2003. Students are free to complete assignments using any comparable spreadsheet program. Answers and solutions will only be guaranteed to work with Excel 2003.

Students who would like to complete assignments with more advanced software (C++, Java, Matlab, R, R+, S, S+, SAS, VBA, etc.) are encouraged to do so. However, weekly assignments (described below) are still due in an Excel 2003-compatible format.

USB Key: Students are required to have one (1) USB key that is dedicated FINA 584. The key must be cleaned of all files and programs. Please make sure to clear all files especially hidden system files and viruses. The goal is to have a quick and easy way to (safely) transport files from your computer to the professor’s computer. At the final exam, students are required to turn-in one USB key that contains only files associated with the exam.

Grades: Class grades are based on four items: class participation, weekly group assignments, an internal group evaluation, and a final exam. The weight of the final exam is normal for HKUST.

i. Class participation	10.0 %
ii. Weekly group assignments	30.0
iii. Internal group evaluation	15.0
iv. <u>Final exam</u>	<u>45.0</u>
Total	100.0 %

You are responsible for all material covered in class, including assigned readings and exercises. As mentioned above, we cover six different topics in this class. When preparing for the final exam, students should concentrate on the class notes and group projects.

Assignments: Each week, starting in Week #1, students will prepare an assignment before class. During the first meeting, the class will be divided into groups of four students (with some flexibility if the class size is not exactly 36, 40, 44, etc.) During the remaining classes, each group is responsible for bringing a working Excel model capable of answering assignment questions. The model should also be flexible and capable of answering a host of additional questions such as: “What if the tax rate changes to 38%?” or “What if the loan term is shortened to 6 years?” A modest amount of group work is aimed at the OBE goal of ensuring students are effective team members and leaders.

Also each week, one or more groups will be chosen at random and their financial model will be uploaded to the instructor’s computer. The group will be responsible for presenting answers to the assignment questions. All members of the group will receive the same grade for the presentation work. The presentation requirement is aimed at the OBE goal of ensuring students communicate effectively in English.

Final exam: {Please excuse me, but this policy is not negotiable} As a strict rule, there is no “make-up” final exam. It is your responsibility to schedule the rest of your activities such that you are able to attend the final exam. The final exam in this class is scheduled to take place on Sunday 18-Dec-2011 from 2:00pm to 5:00pm at HKUST. All students should plan to take the exam at this time. The weight of the final exam is normal for courses at HKUST. At the final exam, students are required to turn-in one USB key that contains only files associated with the exam.

Cases and:
computer codes {The following policy adopted at most top business schools} In the past, students have asked for handouts of the “correct” case analysis after the class has discussed a case. I will not provide such answers for two reasons. First, the best cases are deliberately written to be ambiguous. While there are no right answers, there are good and bad arguments. Handing out my analysis would reduce the ambiguity in the cases and partially defeat the purpose of doing cases. Second, when case analyses are handed out, these answers will eventually reach future students taking the class with probability one. This seriously impedes an open and rewarding case discussion and imposes huge negative externalities both on myself as well as on other people teaching these cases.

Thur 10-Nov-2011 1st Half: Mutual fund performance and style analysis (Class #03)
Sat 12-Nov-2011 Review today's assignment

Readings: "Asset Allocation: Management Style and Performance Measurement"
By: William F. Sharpe
Journal of Portfolio Management, Winter 1992, pp 7-19.

Prepare: Download and answer mutual fund questions
Prepare one (1) model per group

OBE: Use information technology effectively

2nd Half: Optimal portfolio selection
Matrix math
Regression analysis with matrix math

Readings: "The Intuition Behind Black-Litterman Model Portfolios"
By Guangliang He and Robert Litterman
Goldman Sachs, available online

Thur 17-Nov-2011 1st Half: Optimal portfolio selection (Class #04)
Sat 19-Nov-2011 Review today's assignment

Readings: A Step-by-Step Guide to the Black Litterman Model
By: Thomas M. Idzorek
Working paper available online

Prepare: Download and answer portfolio selection questions
Prepare one (1) model per group

OBE: Use information technology effectively

2nd Half: Valuation and private equity

Readings: "Valuing a Cross-Border LBO: Bidding on the Yell Group"
HBS Case 9-204-033

Thur 24-Nov-2011 1st Half: Databases or private equity (Class #05)
Sat 26-Nov-2011 Review today's assignment

Readings: "Valuing a Cross-Border LBO: Bidding on the Yell Group"
HBS Case 9-204-033

"Using APV: A Better Tool for Valuing Operations"
Harvard Business Review Reprint 97306

Prepare: Download and answer questions
Prepare one (1) model per group

2nd Half: Fixed income derivatives
More difficult optimizations

Readings: "A One-Factor Model of Interest Rates ..."
By: Fischer Black, Emanuel Derman, and William Toy
Financial Analysts Journal, Jan/Feb 1990; 46, 1

Thur 01-Dec-2011 1st Half: Fixed income derivatives (Class #06)
Sat 03-Dec-2011 Review today's assignment

Readings: "A One-Factor Model of Interest Rates ..."
By: Fischer Black, Emanuel Derman, and William Toy
Financial Analysts Journal, Jan/Feb 1990; 46, 1

Prepare: Download and answer fixed income derivative questions
Prepare one (1) model per group

2nd Half: Equity derivatives
Monte Carlo simulations
Simulation of stock price paths

Readings: Review FINA your own 529 and 530 class notes
Handout on Microsoft Excel and Monte Carlo simulations
Handout on the MCSim.xla add-in

Thursday's class has been rescheduled. You have the option of going Saturday 10-Dec from 9:00am to 12:20am. Alternatively, there make-up class has tentatively been rescheduled for Sunday 11-Dec at Room 3211 and will run from 10:00am to 1:00pm.

Sat	10-Dec-2011	1 st Half:	Equity derivatives	(Class #07)
Sun	11-Dec-2011		Review today's assignment	
		Readings:	Handout on Microsoft Excel and Monte Carlo simulations Handout on the MCSim.xla add-in	
		Prepare:	Download and answer equity derivatives questions Prepare one (1) model per group	
		OBE:	Use information technology effectively	

		2 nd Half:	Prepare for final exam Please bring questions to class	
		Evaluations:	Do online evaluations in class	
		Readings:	None	
Dec	18-Dec-2011	Final Exam	BOTH SECTIONS TOGETHER	(Final / Class #08)
		Location:	HKUST Rm 3211 (near Lift 19)	
		Time:	2:00pm to 5:00pm	
		Items:	You may bring one (1) sized A4 sheet of paper with handwritten formulas (both sides OK). There will be no internet connections nor will you have access to other materials.	